

2.4: Discussion

Discussion

Write a minimum one-page (12 font, single spaced) discussion on the experiment conducted this week. Address **at least one question in each category** as fully as possible integrating the collected data, providing explanations for the observed trends and evaluating whether your original assumptions about the experiment were validated by the results. **The assignment will be graded on completeness, clarity of the explanations and the meaningful integration of the collected and calculated data.** Correct grammar and appropriate format for the chemical formulae and chemical reactions is expected. **You may use the outline included at the end of this document on how to build your essay to address each category.**

1. (Existing knowledge, research and views) Describe the contents of a solution and indicate the purpose for each.
2. (Existing knowledge, research and views) Describe at least one methods that you could use to determine if a substance is soluble in water.
3. (Existing knowledge, research, and views) Describe the difference between saturated and unsaturated solutions.
4. (Analysis) Consider the steps involved in preparing the saturated alum solution. Classify the solution as saturated or unsaturated in each step and explain your choice.
5. (Analysis) Provide at least one reason for using hot water to dissolve the alum.
6. (Analysis) Provide at least one supported argument for waiting for the solution to cool to room temperature before filtration.
7. (Lab skill) Describe the filtration process in as much detail as you deem necessary. Provide an explanation for the necessity of each step involved.
8. (Existing knowledge, research and views) Solids can be crystalline or amorphous. Describe at least 3 characteristics of crystalline solids.
9. (Analysis) Describe what happens with the saturated alum solution that causes the appearance and growth of the seed crystals.
10. (Lab skill) Describe the process of monitoring and maintaining the seed crystal.
11. (Analysis) Predict what would happen, if you left all your little crystals in the Petri dish instead of transferring a few into the saturated alum solution, and provide a supported argument for your prediction.
12. (Lab skill) Describe what kind of crystals you would select to start your seed crystal growth and what method you would use to transfer the selected crystal from one dish to another.
13. (Experiment design) Using your experience growing the alum seed crystals, propose a protocol for growing crystals from other compounds, such as copper(II) sulfate, sucrose, sodium chloride, etc. Pick one compound to develop your protocol for.
14. (Existing knowledge, research and views) Growing crystals is visually impressive and useful. Describe at least one application for growing crystals.

Recommended outline

Solution are composed ofand In our experiment the solvent is and the solute is We know that we have a solution because The solution is saturated when and it is unsaturated when Solubility depends on temperature. At higher temperature, alum

In the process of making the alum solution we started with hot water because and we cooled the solution before filtration because The steps required for filtration are In the first step it is important to In the second step (continue for each step).

Crystals form when The main characteristics of crystals are Seed crystals should be and of an approximate size of Seed crystals are necessary for When monitoring the crystal growth

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